

- b) determining a first lattice constant and a first thermal expansion coefficient of said first epilayer;
- c) determining a second lattice constant and a second thermal expansion coefficient of said substrate;
- d) ensuring that said first epilayer has either positive lattice mismatch and negative or zero thermal mismatch to said substrate, or negative lattice mismatch and positive or zero thermal mismatch to said substrate; and
- e) choosing a buffer layer which is lattice matched to said first epilayer to be deposited on said substrate before depositing said first epilayer, wherein said buffer layer has positive thermal mismatch to said substrate when said buffer layer and said substrate have positive lattice mismatch, and said buffer layer has negative thermal mismatch to said substrate when said buffer layer and said substrate have negative lattice mismatch[.];
- f) growing said buffer layer on said substrate;
- g) thermally annealing said buffer layer and substrate when said buffer layer reaches a thickness of a bending radius of at least a majority of threading dislocations present in said buffer layer; and
- h) repeating the steps of growing and thermally annealing until an aggregate buffer layer thickness is above said bending radius of all threading dislocations present in said buffer layer.

Please cancel claims 13-17.

Please add the following new claims:

18. A method according to claim 1, wherein the ratio of the thickness of the top substrate layer to the thickness of the additional substrate layer is greater than one.